

TEXTILES AND CLOTHING RESEARCH.

A Report to the Committee on Research in Home Economics
Division of Home Economics, Land Grant College Association
Washington, D.C., November 7, 1948

The purpose of this report is to "delineate the field of research which is peculiarly the responsibility of textiles and clothing as a part of home economics" and to indicate those "methods of research which may be expected to produce useful results "within this field.

It is intended that this statement shall indicate the breadth of interest which is represented by textile and clothing, without reference to the particular organization or subdivision of home economics subject matter which might be characteristic of any one institution or any particular situation. In this connection it is recognized that some overlapping of interests with those of other fields of research might occur within certain departmental organizations. Any such overlapping would be left to be resolved according to individual situations. It is not intended that this statement shall be viewed as erecting walls or barriers to research activity, but rather that it shall indicate the approximate boundaries of this field of research.

Textiles and clothing research in home economics is concerned with the needs of consumers, the desires of consumers, and the satisfactions to be achieved by consumers of clothing and other products made of textile fibers, yarns, or fabrics, which may be selected for personal, home, or institutional use. Its goal might be said to be an increase, for individuals, for families, and for personal and institutional homes, in their share of health, happiness, wholesomeness, effectiveness, and charm (5).

It is realized that the needs of consumers of textile products vary tremendously; that they even may^{not} be clearly recognized by many consumers; that in many cases, although recognized they could not be adequately described; and that minimum requirements for protection, comfort, and adequate social acceptability have not been defined. Customary usage of textile products extends over so long a period for any single article, involves such a multitude of units of clothing and furnishings, and often such undefined periodicity of wear, that specific information concerning performance is very nearly totally lacking.

Likewise, the desires of consumers with respect to the kinds and amounts of textiles they actually want, regardless of their ability to procure the same, are little known and difficult to determine. Such desires are claimed to be the basis for the manufacture of many products, yet the extent to which these desires are put into words by many persons; the extent to which they are influenced by a great variety of stimuli (such as advertising, what is seen in public, and the practices and opinions of friends and associates); the extent to which they are quickly aroused and not based on considered judgment; and the extent to which they might be of a transitory nature and soon discarded, also are unknown.

The difficulty of ascertaining and evaluating consumers' desires is emphasized by the fact that "actual practices may in some cases be at variance with expressed preferences", and the further fact that "some of the good and bad qualities thatwomen attribute to the various fabrics reflect popular misconceptions that are not borne out by scientific tests" (3)

Similarly, the satisfactions realized by consumers as a result of their choices of textile products constitute problems in which are combined both highly intangible and extremely practical and tangible features. The pleasure which could be realized by different individuals from such selections will vary with background and aesthetic development. The comforts they may enjoy from certain textile products likewise will vary with individuals and with situations. These represent real returns to the consumer. At the same time the selection of textile products may involve fairly exact and measureable factors in that the particular service which is expected of a product may be curtailed or prolonged by the nature and quality of the textile involved. Insofar as the unit-service cost of textile products can be reduced, the money which would be expended for replacements could be utilized for the satisfaction of other needs or desires.

In order to achieve such a goal, it is evident that much attention must be devoted to consideration of the chemical, physical, and biological nature of the textile products used for clothing and furnishings. This line of attack inevitably must lead to a detailed investigation of the fundamental relationships among (a) the characteristics of fibers, (b) the construction of yarns, (c) the construction of fabrics, and (d) the nature of fabric finishes, as well as their several interacting relationships to fabric properties, to fabric appearance, and to satisfactory fabric performance with respect to specific uses and to the various problems associated with maintenance. Among the problems which could fall within this group would be (1) relationships between the physical properties of cotton or other fibers and the serviceability of fabrics made from the same; (2) changes in the physical and chemical properties of cotton, linen, and wool during storage; (3) factors involved in the resistance of fabrics to abrasion; (4) effects upon the durability of fabrics of the finishes used to improve the appearance of the materials; (5) the development of a method, suitable for home use, to render fabrics mildew resistant; and (6) the effect of home applied finishes upon the serviceability of fabrics.

Illustrations;

The serviceability of garments as affected by varietal and regional differences in cotton fibers and by methods of harvesting. M.A.Grimes. Texas Agr. Expt. Sta. 1944.

Relationships between properties of cotton fibers and strength of carded yarn. R.W. Webb and H.B. Richardson. U.S. Dept. Agr., Office of Marketing Services. 1945.

Manufacturing and serviceability tests on sheeting made from two selected mill types of cotton. R.E. Rogers, M.B. Hays, and J.T. Wigginton, U.S. Dept. Agr. Tech. Bul. 645. 1939.

Diameter relationships of wool fibers from five breeds of sheep raised in South Dakota. B. Bailey. J. Agr. Research 60: 415-426. 1940.

The relative serviceability of fabrics containing various percentages of new and reused wool. L. Lund. South Dakota Agr. Expt. Sta. 1943.

A serviceability test on blankets made from four blends of wool. M.B. Hays, R.E. Elmqvist, and J.I. Hardy, U.S. Dept. Agr. Tech. Bul. 572. 1937.

The wearing qualities of wool serge. L.O. Lund, E.L. Phelps, H.W. Norton and B.B. Miller. South Dakota State Coll. of Agr. Mech. Arts. Tech. Bul. 6. 1947.

Minimum standards for clothing construction. F.E. Petzel, V. Everhart, and K. Tye. Ohio Agr. Expt. Sta. 1944.

Evaluation of various water repellent treatments on twenty-three cotton fabrics, G. Smith, H.A. Wellington, P.E. Keeney, and H.M. Thompson. Rayon Textile Monthly 28:332-334, 371-373, 423-426. 1947.

Effect of fiber content and care on resiliency, thickness, and thermal conductivity of blankets. P.A. Gilmore and K.P. Hess. Rayon Textile 27:252-256, 1946.

Color fastness of certain types of dyes on women's and children's wearing apparel fabrics. H.E. Borton, C.B. Walker, P.B. Mack, and C.A. Seibert. Am. Dyestuff Reprtr. 31:603-627, 641. 1942.

A study of natural dyes on wool and cotton: their resistance to micro-organisms and fastness to light and washing. R.P. Dowlen. Univ. Tennessee. Master's thesis. 1947.

Mechanical degradation of rayon fabrics in domestic laundry procedures. M.H. Graydon, D.M. Lindlsey, and J.B. Brodie. Am. Dyestuff Reprtr. 36: 397-399. 1947.

Comparison of aryl sulfonate and soap for the washing in hard water of cotton, linen, spun cellulose-acetate rayon, spun regenerated-cellulose rayon, silk, and wool. V. Ester, R. Donohue, M. Blair, F.B. Castonguay, L. Dale, D. Shepard, and R. Edgar. Am. Dyestuff Reprtr. 32:121-122, 135-141. 1943.

The effect of wringing upon the tensile strength of rayon fabrics. D.S. Lyle and D.C. Black, Am. Dyestuff Reprtr. 33:441-444. 1944.

Shrinkage of rayon fabrics due to laundering: pressed under controlled conditions. A.C. Gaston and H.M. Fletcher. Rayon Textile Monthly 25:238-239. 1944.

Detergents and practices used in home laundering in selected communities in Kansas. R.E. Hamilton. Kansas State Col., Master's thesis. 1945.

The effect of various storage conditions upon a cotton, a linen, and a wool fabric. R.E. Rogers and M.B. Hays. Textile Research 13:20-35 1943.

The deterioration of cotton fabric by certain micro-organisms. D. Klemme, G.A. Grethouse, K. Bollenbacher, and S. Pope. U.S. Dept. Agr. Circ. 737. 1945.

The premanency and effect of four organic synthetic insecticides on selected wool fabrics. J.H. Olliver. Kansas State Col.. Master's thesis. 1948.

Furthermore, the economic, sociological, psychological (2) and aesthetic aspects of the use of clothing and textile furnishings present wide, complicated and closely interrelated fields for study. Such research should aim to assist consumers, according to their varied viewpoints, in achieving the maximum in satisfactions to be realized from clothing and the textiles used for furnishings. Specialists in home economics and the social sciences are continuing the study started about two years ago, of areas of research in textiles and clothing which are related to the social sciences.

In the area of economics would be included problems which deal with consumer buying practices; consumer demands for goods and services; consumer knowledge and evaluation of the textile products used in clothing and furnishings; consumer acceptance of new textile products; the cost of clothing and of textiles used in furnishing, and the factors which influence these costs; and the costs of maintenance. Specifically these might include topics such as (1) clothing standards for groups of people or for families at various income levels with respect to given geographical locations; (2) minimum clothing needs for people of different areas, income levels, social groups, and ages; (3) studies of the preferences of values sought, and practices followed by consumers in the purchase of articles of clothing and of fabrics for household needs; (4) expenditures for clothing and household textiles; and (5) studies of women's ready-made clothing with respect to the construction used, the nature and extent of alterations required and the frequency of replacement.

Illustrations:

American clothing consumption, 1879-1909. H.L. Brew. Univ. Chicago. Doctor's thesis. 1945.

Clothing consumption of 299 village and 551 farm families of Vermont. M.E. Tiffany. Vermont Agr. Expt. Sta. Bul. 451. 1939.

Some Illinois clothing consumption patterns. C. Fitzsimmons and N.L. Perkins. J. Home Econ. 39:495-497. 1947.

Family expenditures for clothing. A. Urban and village series. B. Farm series. D. Monroe and H.Y. Pennell. U.S. Dept. Agr. Misc. Pub. 422 and 428. 1941.

What rural women spend for dresses. L. Mork and G.M. Angle. J. Home Econ. 37: 515-519. 1945.

What college women spend on clothes. A.C. Latzke and H.M. Windhorst. J. Home Econ. 35:555-559. 1943.

Women's preferences among selected textile products. Bureau of Agricultural Economics. U.S. Dept. Agr. Misc. Pub. 641. 1947. 124 pages.

A study of the factors considered by consumers in selecting men's shirts. J.H. Johnson. Texas State Col. for Women. Master's thesis. 1940.

The relation of family sewing practices to socio-economic status. H.E. Wagner. Pennsylvania State Col., Master's thesis. 1944.

Consumer demand in Missouri for selected articles of household textiles. J.V. Coles. Missouri Agr. Expt. Sta. Bul. 301. 1939.

Textile materials used for household purposes by farm families. M.E. Frayser. South Carolina Agr. Expt. Sta. Bul. 341. 1942.

Saving by home clothing construction. M.L. Cowles. J. Home Econ. 31:32-34. 1939.

Factors affecting rural families' decisions in the care of laundry, with emphasis on the financial aspects. A. Ailin and D. Stockburger. Cornell Univ. Agr. Expt. Sta. 1945.

In the area of sociology would be included problems related to the purposes served by clothing and textiles in the maintenance of human societies; group patterns; and social processes involved in the use and development of clothing and furnishings. These might include studies of the influence of clothing and personal appearance upon the relationships among various members of the family, as well as between members of the family and other individuals and groups in the community; and standards for fabrics and clothing with respect to their psycho-social function.

Illustrations:

Social participation as a criterion for determining scientific minimum standards in clothing. D. Dickins. Rural Sociology 9:340-349. 1944.

In the area of psychology it may be assumed that the individual is affected by clothes and that research in this field might aim to determine the nature of these effects; the methods whereby clothes may be used to achieve maximum development of the individual; and the means whereby conflicts which arise from mistakes in clothing practices may be analyzed and resolved.

Illustrations

Study of clothing of pre-school children as it relates to their behavior and development. M. Brasie and R. Smart. Cornell Univ. Agr. Expt. Sta. 1946.

Clothing and appearance; their psychological implications for teen age girls. S.S. Silverman. Teacher's Col. Columbia Univ. Doctor's thesis 1945.

In the field of art as related to clothing and textile furnishings is to be found the application of the principles of color and design together with the psychological and functional influence of these two factors.

Illustrations:

Design as a factor in selecting fabrics. E. Dahl. Iowa State Col. Master's thesis. 1939.

- Work Clothes for women. C.L. Scott, M. Smith, R. O'Brien. U.S. Dept. Agr., Bur. Human Nutrition and Home Econ.

Finally, in the area of history as related to clothing and textile furnishings, there could be included records of changes in usage which constitute a background for modern practices.

Illustrations:

Social, political, and historical influences reflected in twentieth century costume. D.J. Brockway. Univ. Washington. Master's thesis. 1938-39.

The history of the clothing industry in California. B. Keane, E.B. McGowan, and J.V. Coles. California Agr. Expt. Sta. 1943-44.

Production and use of textiles in the United States during the nineteenth century. J. McClew. Univ. of Washington. Master's thesis. 1939.

The development and use of flax as a textile fiber. H.E. Heffron, Univ. Chicago. Master's thesis. 1943.

The methods of research which may be expected to produce useful results within the field of textiles and clothing will include such methods as are recognized as sound and suitable for the study of the chemical, physical and biological nature of textile products. Many of these methods will involve the measurement of specific properties such as the effect of reagents on the fiber, heat transfer and resistance to abrasive wear, and fiber resistance to micro-organisms. Some will have been developed for use in other connections but found to be adaptable to particular problems related to textiles. In some instances new methods will need to be devised, and the relationship between properties and performance will need to be demonstrated.

In addition there will be included methods which are suitable for the study of the economic, psychological, sociological, and aesthetic aspects of clothing and textiles used for furnishings. These methods will involve the use of questionnaires, inventories, observation of practices, accounts, research interviews, sociometric and psychometric technics, role testing, and other devices as needed.

Another aspect of methods which could be used is the organization of cooperative effort to solve some of these problems. Several cooperative studies in textiles and clothing between state experiment station and between state stations and the Bureau of Human Nutrition and Home Economics have proved to be successful.

In setting up the procedure for the particular research to be undertaken it will be necessary to consider the design for the experiment, the selection of experimental material, the importance of sampling, the evaluation and choice of methods of measurement to be used, and the basis for the interpretation of data. It may be assumed in all cases where such is required, that adequate and up-to-date methods of statistical

procedure will be employed in order to facilitate the analysis and interpretation of findings which have been assembled.

Illustrations

A study of the relation between number of tests and the mean breaking strength and variability of a two-ply worsted yarn. H.J. Ball and H.H. Manderbach. *Bul. Lowell Textile Inst.*, Ser. 42, No. 1. 1938.

Comparison of certain yarn testing techniques. E.L. Phelps, H.M. Ward, D. Van Houten, and B. Bailey. *Rayon Textile Monthly* 25:125-127. 1944.

Cooperative studies on a laboratory method for evaluating synthetic detergents. J.B. Crowe. *Am. Dyestuff Reprtr.* 32:237-241. 1943.

A comparison of sampling methods. G.H. Brown. *J. Marketing* 11:331-337. 1947.

Some problems of sampling in connection with studies of family economics. D. Dickins. *Social Forces* 25 (3) :327-332. 1947.

Problems in analyzing clothing data from the consumer purchases study. D. Monroe. *J. Home Econ.* 31:571. 1939.

Within this field of research as it has been delineated, the various methods to be used can yield valuable findings only if trained workers have adequate time, sufficient assistance, and the necessary tools with which to work. Such tools will involve the training and experience of the worker, as well as good library facilities. Certain aspects of textiles research are completely impossible without a suitable and well equipped laboratory. In this connection, therefore, it should be noted that the laboratories available in home economics for the study of textiles products are still very few in number. Some of them are small and entirely inadequate for the work to be done. Textiles manufacturers have awakened to modern research methods and are making enormous strides in the production of new fibers, new fabrics, and new finishes. Textiles research within home economics will need comparable support and facilities if it is to keep pace with the materials offered to consumers for clothing and furnishings. We need a greater store of information based on research to answer many of the questions which come to us. No one can estimate the loss to families and institutions which is represented by the limited volume of our research in this field. Research in textiles and clothing needs the strong backing as well as the financial support accorded to the best of the older and well established programs of research in home economics.

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